

What is claimed is:

1. A capacitor comprising:
an aluminum case; and
5 a capacitor stack mounted within the aluminum case, the capacitor stack comprising one or more anodes and one or more cathodes, one of the one or more anodes and one or more anodes attached to the aluminum case;
wherein the case is adapted to be an active capacitor element.
- 10 2. The capacitor of claim 1, wherein the case is etched and is adapted to be an active cathodic element servicing one or more anodes of the capacitor stack which are adjacent the case.
3. The capacitor of claim 1, wherein the case is adapted to be an active anodic
15 element.
4. A capacitor comprising:
an aluminum case having an etched inner surface;
a capacitor stack disposed within the case, the capacitor stack including a
20 plurality of cathode stacks and a plurality of anode stacks, the cathode stacks electrically coupled with the etched inner surface; and
the plurality of anode stacks including a first anode stack disposed adjacent to the etched inner surface, the first anode stack having a major surface facing the etched inner surface of the case and having an electrolyte saturated separator
25 disposed between the etched inner surface and the major surface to facilitate charge storage between the etched inner surface and the major surface.

5. The capacitor as recited in claim 4, wherein the plurality of anode stacks include a second anode stack disposed adjacent to a lower inner surface, the second anode stack including at least one conductive layer having a second major surface, the second major surface facing the lower inner surface of the case.
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6. The capacitor as recited in claim 4, wherein the plurality of anode stacks comprise etched anode stacks.
7. The capacitor as recited in claim 4, wherein the case comprises at least 98% aluminum.
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8. A method comprising:
forming and aligning a capacitor stack including at least one anode stack and at least one cathode stack;
15 etching at least a portion of an inner surface of a capacitor case, the inner surface including an upper inner surface and a lower inner surface;
disposing the capacitor stack in the capacitor case, and an at least one anode stack is adjacent the inner surface of the capacitor case; and
disposing a separator between the at least one anode and the inner surface of
20 the case.
9. The method as recited in claim 8, further comprising etching layers of the anode stack.
- 25 10. The method as recited in claim 8, further comprising confronting a major surface of a second anode stack with the lower inner surface of the case.

11. The method as recited in claim 8, further comprising etching an entire inner surface of the case.

12. An assembly comprising:

- 5 at least one lead adapted to apply electrical energy to patient;
 a monitoring circuit adapted to monitor electrical function of a heart;
 a therapy circuit adapted to deliver electrical energy through the at least one
lead, wherein the therapy circuit includes one or more capacitors, each including:
 a case having an inner surface including an upper inner surface
10 and a lower inner surface:
 a capacitor stack disposed within the case, the capacitor stack
 including a plurality of cathode stacks and a plurality of anode stacks; and
 the plurality of anode stacks including a first anode stack
 disposed adjacent to the upper inner surface, the first anode stack including
15 at least one conductive layer having a major surface, the major surface
 confronting the upper inner surface of the case; and
 a separator between the upper inner surface and the major surface.

13. The assembly as recited in claim 12, the plurality of anode stacks including
20 a second anode stack disposed adjacent to the lower inner surface, the second anode
 stack including at least one conductive layer having a major surface, the major
 surface confronting the lower inner surface of the case.

14. The assembly as recited in claim 12, wherein the plurality of anode stacks
25 comprise etched anode stacks.

15. The assembly as recited in claim 12, wherein the case comprises at least
98% aluminum.

16. A capacitor assembly comprising:
at least one anode stack including one or more anode conductive layers and ,
an anode separator;
at least one cathode stack including one or more cathode conductive layers
5 and a cathode separator;
at least one separator disposed between the anode stack and the cathode
stack,
each at least one anode stack stacked with the cathode stack to form a
capacitor stack; and
10 a capacitor case sized to receive therein the capacitor stack, the capacitor
case including a conductive surface, and one or more of the anode conductive
layers electrically coupled with the conductive surface of the capacitor case.
17. The capacitor assembly as recited in claim 16, wherein the capacitor case
15 comprises an etched capacitor case.
18. The capacitor assembly as recited in claim 16, further comprising a cathode
feedthrough coupled with at least one cathode stack, the cathode feedthrough
extending through and is insulated from an opening of the case.
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19. The capacitor assembly as recited in claim 16, wherein one or more of the
anode conductor layers includes an exposed edge coupled with the capacitor case.
20. The capacitor assembly as recited in claim 16, wherein the one or more
25 anode conductive layers is coupled to the capacitor case by an elongated tab.

21. The capacitor assembly as recited in claim 16, further comprising a welded connection disposed between at least one of the one or more anode conductive layers and an inner surface of the case.
- 5 22. The capacitor assembly as recited in claim 16, further comprising an epoxied connection disposed between at least one of the one or more anode conductive layers and an inner surface of the case.
23. The capacitor assembly as recited in claim 16, wherein the case comprises
10 at least 98% aluminum.
24. The capacitor assembly as recited in claim 16, wherein the capacitor case comprises an etched capacitor case of at least 99.99% aluminum.
- 15 25. The capacitor assembly as recited in claim 16, further comprising at least one edge clip coupled with each of the at least one anode stack, and the edge clip is electrically coupled with an inner surface of the case.
26. A capacitor assembly comprising:
20 at least one anode stack including one or more anode conductive layers and an anode separator;
a capacitor case sized to receive therein the anode stack, the capacitor case including a inner conductive surface; and
means for electrically coupling the at least one anode stack with the inner
25 conductive surface.

27. The capacitor assembly of claim 26, wherein means for electrically coupling comprises an elongated aluminum tab coupled to one of the at least one anode stacks.

5 28. A capacitor assembly comprising:

at least one anode stack including one or more anode conductive layers and an anode separator, the one or more conductive layers including an exposed outer anode edge;

10 at least one cathode stack including one or more cathode conductive layers and a cathode separator;

at least one separator disposed between the anode stack and the cathode stack,

each at least one anode stack stacked with the cathode stack to form a capacitor stack;

15 an etched capacitor case sized to receive therein the capacitor stack, the capacitor case including a conductive surface, and the exposed outer anode edge electrically coupled with the conductive surface of the capacitor case;

a cathode feedthrough coupled with at least one cathode stack, the cathode feedthrough extending through and is insulated from an opening of the case; and

20 each of the cathode conductive layers is defined in part by a cathode edge surface, and each of the anode conductive layers is defined in part by an anode edge surface, and the cathode edge surface is offset from the anode edge surface.

29. The capacitor assembly of claim 28, wherein the capacitor case comprises at
25 least 99.99% aluminum.

30. A method comprising:
stacking at least one anode stack including one or more conductive anode
layers and an anode separator;
stacking at least one cathode stack including one or more conductive
5 cathode layers and a cathode separator;
aligning and stacking the at least one anode stack and the at least one
cathode stack to form a capacitor stack;
disposing the capacitor stack within a capacitor case; and
electrically coupling the anode stack with the capacitor case.
- 10 31. The method as recited in claim 30, further comprising etching an inner
surface of the capacitor case.
32. The method as recited in claim 30, further comprising etching the one or
15 more conductive anode layers.
33. The method as recited in claim 30, further comprising welding the anode
stack with the capacitor case.
- 20 34. The method as recited in claim 30, further comprising bonding the anode
stack with the capacitor case.
35. The method as recited in claim 30, further comprising coupling a cathode
feedthrough with the cathode stack, and disposing the cathode feedthrough through
25 an opening of the capacitor case.
36. The method as recited in claim 30, further comprising stacking the
conductive cathode layer in an offset position from the anode conductive layer.

37. The method as recited in claim 30, further comprising exposing outer edges of the one or more conductive anode layers.

38. The method as recited in claim 37, further comprising coupling the exposed
5 outer edges with the capacitor case.

39. The method as recited in claim 38, further comprising welding the exposed outer edges with the capacitor case.